

[®]Kcs POWER PC BOARD

V 4.5

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Warranty conditions

Kolff Computer Supplies BV Kuipershaven 22 3311 AL Dordrecht The Netherlands

- hereafter referred to as KCS

guarantees the state and functioning of this appliance, whose complete product specifications have been detailed on the purchase bill, for a period of no less than twelve months, according to the hereafter listed conditions. Only users who returned their registration card (properly filled in), will be considered buyers and therefore will be entitled to a guarantee.

I, 1. The extent of the warranty

(1) The warranty is in respect of the hardware only. KCS guarantees that the appliance is delivered without defects in material or workmanship that will negatively affect operating capabilities, as detailed in the accompanying manual.

(2) KCS reserves the right to repair or exchange parts or exchange the whole appliance or refund the purchase price at its discretion. Parts that have been replaced remain property of KCS.

(3) Labour and material costs and return carriage will be covered by KCS. The purchaser will be accounted for costs arising from sending the appliance to KCS.

~2. Warranty period

The warranty period commences on the date of consumer sale by the KCS dealer. Within this period KCS will accept warranty claims to the dealer, who sold the appliance, as well as warranty claims to KCS. In both cases, the date that KCS receives the claim is decisive. The warranty period ends one year after the first day of delivery. Service granted under the warranty does not affect the expiring date of the warranty.

~3. Warranty procedures

(1) if any faults in material, operating capabilities or performance of the appliance are discovered on purchase, the buyer has to make a warranty claim within one week. KCS or the KCS dealer immediately has to be informed in writing about faults that couldn't be detected within this period, even after thorough investigation.

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(2) Only the KCS dealer who delivered the appliance and KCS are entitled to accept warranty claims. Loss or damage of the appliance in transit to and from the location where the warranty claim is accepted and in transit from the locations where the repaired appliance is returned, is completely at the buyer's risk.

(3) Only warranty claims accompanied by a complete purchase bill, will be attended to. This bill has to contain the following information: date of purchase and product name of the appliance.

„4. Exclusions

(1) The warranty becomes void if:

(a) the appliance is damaged or destroyed by force or external influences (moisture, short-circuit, lightning etc.). (b) the appliance is damaged by misuse, particularly if the instructions have been ignored. (c) the appliance is repaired by unauthorized persons or unauthorized institutions. (d) the appliance shows mechanical damages of any kind.

(2) Warranty claims also will be refused if the sticker with a clearly readable BIOS serial number is missing from top and bottom of the KCS POWER BOARD.

~5. General conditions

(1) The legal relation between buyer and KCS will be provided for by this warranty. All other claims, particularly in case of damage or loss in any form, that have been caused by the appliance or the use of it, cannot be made.

(2) Warranty claims to the vendor of the appliance are excluded if and as far as KCS takes actions according to this warranty.

(3) Warranty claims can only be made by the buyer of the appliance; these claims are not transferable.

(4) if a condition of this warranty is no longer applicable, the legal validity of the remaining conditions will not be affected. In that case, both parties will be obliged to agree on a condition that is equivalent or as equivalent as possible to the condition that is no longer applicable.

(5) The competent court of law that will judge all direct and indirect disputes, as far as this is permitted, resides in Dordrecht/The Netherlands, on the understanding that Kolff Computer Supplies BV remains entitled to bring possible disputes before a court anywhere else.

16) This KCS warranty is valid in addition to the guarantee obligations that the KCS dealer has to attend to under the law. The buyer therefore can also make his warranty claims to the KCS dealer by rights of these conditions or by legal right of choice.

LIMITED RESPONSIBILITY AND LIMITED WARRANTY

KCS doesn't guarantee the use or the consequences of the use of the software or the documentation in as far it concerns the correctness, accuracy, reliability, the acceptance etc.. The buyer accepts the complete risk, the consequences and application of the software. If the software or the documentation is inferior, the buyer - that means that not KCS, the KCS dealers, distributors, sales representatives nor employees - is accountable for costs of possible repair or maintenance.

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Preface

You have just bought a high-quality product that will considerably enhance the possibilities of your Commodore AMIGA. The KCS POWER PC BOARD provides your AMIGA with an extra 1 megabyte of RAM (although some AMIGA configurations will only be able to access an extra 512 kilobytes of RAM). The KCS BOARD will also give owners of an AMIGA 500 and 600 access to an internal hardware clock.

The KCS POWER PC BOARD converts your AMIGA into an almost completely IBM-PC XT (TM) compatible computer, allowing full use of printer and serial port, mouse, one or two joysticks and internal and external floppy-and hard-disk drive(s). Turboboards and Flicker Fixers are also supported. Nearly all PC-DOS software is supported by the KCS POWER PC BOARD. To illustrate: this manual is written with an AMIGA 2000 using the well-known PC program Wordperfect 5.1.

We realise you want to get going with the KCS POWER PC BOARD as soon as possible. Nevertheless, haste trips over its own heels. Step by step this manual makes clear how to install and use the KCS POWER PC BOARD quickly and correctly. So please don't experiment; read the manual!

This manual describes the installation and use of the KCS POWER PC BOARD for different types of AMIGA computers. Please note that references in the manual to "AMiGA 2xxx" and "AMIGA 3xxx" refer to models such as the AMIGA 2000 and 2500, and the AMIGA 3000 respectively.

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1. Unpacking and installing the PC BOARD

1.1 Unpacking

Check the contents of the package, it should include:

1. The hardware emulator, consisting of a printed circuit board holding various electronic components. (The hardware emulator included in the version for AMIGA 6xx models is situated in a plastic housing and connected by a flat cable to a special fitting adaptor). 2. One 3.5 inch floppy disk with the text 'KCS POWER PC BOARD [AMIGA]' written on it. The write-protection on this disk has been cut out (the slide switch usually found in the corner of the diskette). Therefore, the diskette is readable, but write-protected. 3. KCS manual including warranty registration card. 4. If you purchased the POWER PC BOARD including the MS-DOS Operating System:

- One or more MS-DOS system disks - One or more MS-DOS manuals

If one of these items is missing, contact your dealer to complete or replace these items. To install the KCS POWER PC BOARD in an AMIGA 2xxx/3xxx, you additionally need the KCS adapter card.

References in the manual to MS-DOS refer to the PC operating system, which may have been supplied with the PC BOARD, or one purchased separately.

Although MS-DOS 5.0 is specifically mentioned in this manual, you do not have to use this operating system. For example, a popular alternative is DR-DOS. However, the manual refers throughout to MS-DOS, as this is, as we write, the best known and most widely used operating system for IBM compatible computers.

1.2 Copying the supplied floppy disk(s)

The diskette "KCS POWER PC BOARD [AMIGA]" is supplied with the KCS

POWER PC BOARD. Note that the KCS POWER BOARD can't operate without the software on this diskette, therefore, make a working copy of this diskette first.

Put away the original diskette safely and use the working copy during the following installation procedures and for use thereafter. Copying the 'KCS POWER PC BOARD' floppy disk is explained in your AMIGA user's manual (copying can be done with 'DUPLICATE' in the Workbench or with a copy program).

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Floppy disks intended to be used for PC purposes, cannot be copied in the AMIGA mode of your computer, unless you have some special purpose copying software. This applies e.g. for the MS-DOS Operating System disks (only included if specifically ordered). You can, of course, copy these disks in the PC mode of the KCS POWER PC BOARD. For this, consult the MS-DOS manual (only included if you purchased the MS-DOS operating system).

1.3 installation of the KCS POWER PC BOARD

Caution: Make sure that before and during installation the KCS POWER BOARD is not placed on any metal surface and avoid excessive contact with your fingers. This can damage the components on the board. Furthermore the clock, if available, can be discharged partially, shortening the life-span considerably. It is wise to take hold of the KCS POWER PC BOARD on the sides. If you are using an adapter, make sure the gold contacts on both sides are clean. If necessary, remove any dust from the expansion slot of your AMIGA with a brush.

Installation in an AMIGA 600

Turn off the power and disconnect all cables. Turn the AMIGA upside down and make sure the back of the computer is in front of you. A cover about 8 by 11 centimetres in size is now clearly visible. This cover can be opened using a screwdriver or a coin. The compartment under this cover is specifically designed for hardware expansions like the KCS POWER PC BOARD. Opening the cover does not affect the warranty conditions of your AMIGA. If a hardware expansion is already in this compartment, remove this before installing the KCS POWER PC BOARD.

The actual emulator is situated in the plastic housing from which a flat cable emerges. You will see a small printed circuit board at the tip of this cable. You have to plug this printed circuit board into the connector of your AMIGA. The printed circuit board only fits in one way. You can plug the printed circuit board in firmly with moderate force. You will not need the cover any more, as the KCS POWER PC BOARD is now connected to the AMIGA. Keep the cover in a safe place.

Caution! The flat cable between the printed circuit board and the actual emulator is only a few centimetres long. Therefore, it is inevitable that your AMIGA rests on top of the emulator. Included with your KCS POWER PC BOARD you will find two plastic housing boxes, that you can stick to the bottom of your AMIGA with the supplied adhesive tape. As your AMIGA is now resting on the two plastic housing boxes, the emulator now fits neatly under your computer. You can not replace the emulator cable by- a longer cable. The KCS POWER PC BOARD would not function.

Turn back the AMIGA and plug in all cables. The KCS POWER PC BOARD is now installed and ready to be used.

Installation in an AMIGA 500 or 500 Plus

Turn off the power and disconnect all cables. Turn the AMIGA upside down and make sure the back of the computer is in front of you. A cover about 10 by 15 centimetres in size is now clearly visible. This cover can be opened using a screwdriver or a coin. The compartment under this cover is specifically designed for hardware expansions like the KCS POWER PC BOARD. Opening the cover does not affect the warranty conditions of your AMIGA. If a hardware expansion is already in this compartment, remove this before installing the KCS POWER PC BOARD. Only one expansion fits in the compartment at a time. Take the KCS POWER PC BOARD and turn it until the electronic parts are facing down and the connector is on the left side. Place the KCS POWER PC BOARD in the expansion slot compartment and push it gently to the left, so that the connector on the printed circuit board of the AMIGA and that of the KCS POWER PC BOARD are pushed against each other.

Caution! The KCS POWER PC BOARD connector is longer than the connector on the AMIGA printed circuit board. Take care that on the side of your computer where normally the cables are plugged in (you previously disconnected them), the tips of both connectors exactly link up. After installation, the longer KCS POWER PC BOARD connector will stick out on the keyboard side of your AMIGA.

Take care that the KCS POWER PC BOARD stays horizontal and press both connectors together. Usually you have to use some force; be sure that the connectors fit together properly. Bending the pins is not very likely, but is nevertheless not impossible. Be sure the board is not installed out of position. Close the cover again. Both pins on the inside of the cover exactly fit in the two holes in the KCS POWER PC BOARD. Turn back the AMIGA and plug in all cables. The KCS POWER PC BOARD is now installed and ready to be used.

Installation in an AMIGA 1500, 2xxx, 3xxx or AMIGA 4xxx

To install the KCS POWER PC BOARD in one of these AMIGA models, you need an additional KCS adapter card. This card is not included, so you have to purchase it separately. Firstly, the KCS POWER PC BOARD has to be connected to the adapter card. For that purpose place the adapter card and the KCS POWER PC BOARD side by side, components on top. Now the two printed circuit boards fit like two pieces of a jigsaw puzzle. The black KCS BOARD connector exactly fits the gold coloured connector of the adapter. Press both parts firmly together. Usually you have to use some force; be sure that the connectors fit together properly. Bending the pins is not very likely, but nevertheless not impossible. Be sure the board is not installed out of position.

Caution! To fit both the KCS POWER PC BOARD and the adapter card in your AMIGA, you have to open the computer. If the warranty period of your AMIGA is still valid, it is possible that this will expire your warranty. To be sure refer to your AMIGA manual.

Turn off the power and disconnect all cables. Only remove those screws necessary to open the system unit case. Carefully open your AMIGA. Do not touch the parts inside the computer. In the AMIGA several expansion slots are available to be used by hardware expansions like the KCS POWER PC BOARD. Find one that is empty. If necessary refer to your AMIGA manual to find out which slots can be used by AMIGA hardware expansions. There is only one way to fit the KCS POWER PC BOARD together with the adapter card into the chosen slot. Press the card firmly into the slot until both KCS BOARD and adapter tightly fit. Take care that the adapter is not placed out of position. Then close the computer case, tighten the screws and reconnect the cables. Now the KCS POWER PC BOARD is installed and ready to be used.

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2. Configuration of the KCS POWER PC BOARD

If you do not have a hard disk, insert your working copy of the included "KCS POWER PC BOARD [AMIGA]" disk in the disk drive and then turn on (or reset) the computer. The files on the disk will be used to start (or boot) the computer. If you do have a hard disk, and you want to install the emulator software to it, start up your AMIGA from the hard disk and then insert your working copy of the "KCS POWER PC BOARD [AMIGA]" disk.

Caution! If your AMIGA does not start (the screen remains empty), or if the power light starts to flash, the KCS POWER PC BOARD is probably not correctly installed. Re-read the installation procedure, and check that the connectors are fitted firmly.

The monitor screen now shows an icon of the inserted floppy disk. Click the mouse twice on that icon to reveal the programs on the disk. The next paragraphs describe the various programs.

2.1 PC UTILITIES

You start up this program by clicking the mouse twice on this icon. PC UTILITIES prepares an PC disk, which contains a number of utility programs to be used in the PC mode of the KCS POWER PC BOARD. Have a floppy disk ready; it may be empty or even unformatted. Wait until the program is finished and put aside the prepared disk. You will find the description of the programs on this disk in Pi 4.3.

2.2 INSTALL

You start up this program by clicking the mouse twice on this icon. This program installs the KCS clock (only in an AMIGA 500 and 600) and the KCS RAMdisk (only in AMIGA 500, 512 kilobyte Chip-RAM mode). INSTALL also allows you to choose between installation on harddisk (the INSTALL program copies only the necessary programs to your harddisk) and installation on floppy disk. In the latter case INSTALL changes the Start-up Sequence on the copy of the "KCS POWER PC BOARD [AMIGA]" disk. That means that your computer after booting from this disk immediately starts in the PC mode. However, if you hold down the left mouse button during booting, the Workbench program will be started up. INSTALL automatically takes into account extra memory and / or a Turboboard connected to your AMIGA.

2.3 The Emulator Software

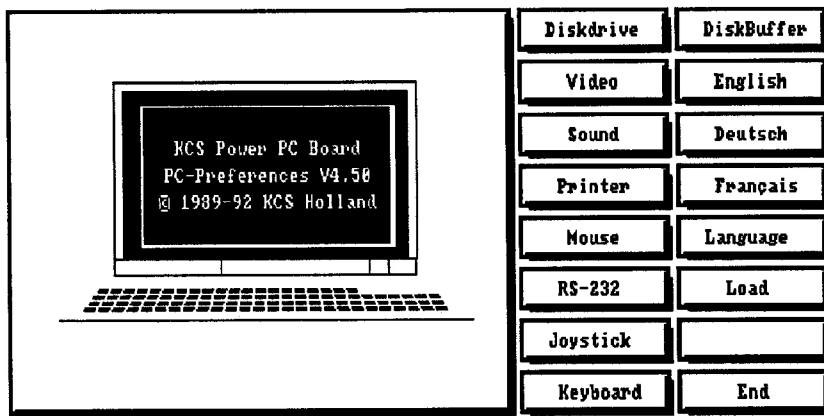
The emulator software is on the KCS POWER PC BOARD diskette (hidden to the Workbench). You can install the emulator to hard disk by using the program INSTALL. If you don't have a hard disk, INSTALL will prepare a fast-booting floppy disk to start the emulator directly to the PC mode. (While starting up the diskette you can keep the left mouse switch pressed in; a Workbench will then appear instead of the emulator). By clicking the mouse twice on the emulator icon, you open this drawer, where you find the following programs:

2.4 HD-SETUP

You start up this program by clicking the mouse twice on this icon. HD-SETUP assigns (a part of) your hard disk for use as a PC hard disk. The usage of HDSETUP will be explained in ~ 3.3. If you install the emulator to hard disk using INSTALL, you will find this program in the POWER-PC drawer of your hard disk.

2.5 PC-PREFERENCES

You start up this program by clicking the mouse twice on this icon. The PCPREFERENCES program makes it possible for you to adjust the default settings of the KCS POWER PC BOARD. If you install the emulator to hard disk using INSTALL, you will find this program in the POWER-PC drawer of your hard disk. If you prepared a fast-booting floppy disk, you will find this program on this disk. The settings you have chosen are stored in a file called PC-PREFS in the s: directory of your hard disk or floppy disk respectively.



PC-PREFERENCES

The main menu of the configuration program is shown on your monitor screen after starting up this program. On the right-hand side you will see sixteen blocks that give access to the submenus. The complete screen is as follows: (illustration may vary)

By clicking the mouse on the labelled boxes, you activate the various functions described hereafter.

Language Using the 'Language' option, you can choose the language of the PCPREFERENCES program. Click on this option to call up a view of the available languages. Use your mouse to select the chosen language on the left-hand side of the screen. You can also choose directly one of the boxes with 'English', 'Deutsch' or 'Frangais'.

Floppy disk drives This option allows you to customize the characteristics of at most four floppy disk drives in the PC mode. The default settings will be satisfactory in most cases, so try our settings before you change them. The option "Drive Connection" allows you to determine how the various disk drives of your AMIGA will be designated in the PC mode. MS-DOS always uses letters to define disk drives, for instance A: instead of DFO:, and B: instead of DF1:. if you have only one drive (DFO:) then there is no choice but to give it the letter A: (with O(A) in the box). if you have two or more drives, then you can choose which drive is given which letter. MS-DOS 5.0 defines disk drives differently. If you are planning on using MSDOS 5.0, click the mouse on the 'DOS 5' box. Changing settings is done by clicking the mouse indicator on the appropriate box. If the setting is represented by a numeric value, then this value can be increased by clicking on the righthand side of the box. Decreasing can be done by doing the same on the lefthand side. The RAM connection option allows you to switch on or off the diskbuffers of disk drivers (see also page 12).

The values of the Initialising time, Headsettle time and 'Who controls?' are preset. Changing these settings will have no effect. The program uses the following values:

Initialising time 512 ms Headsettle time 15 ms Who controls? AMIGA

Only changing the Step time has any effect. If during normal use under PC mode a disk drive occasionally reports 'drive not ready', it is worth trying to increase the Step time. The Step time default value is 3 ms for 3^{1/2} inch disk drives and 6 ms for 5^{1/4} inch disk drives.

The Drive Type option makes it possible to indicate a 5¹/₄ inch or a 3¹/₂ inch disk. We assume that a 5¹/₄ inch drive uses 40 track disks. In case you have a 5³/₄ inch 80 tracks drive that is not switchable to 40 tracks, then answer Doublestep with YES. If you can use a hardware switch or if the drive has 40 tracks, answer Doublestep with NO. We advise you to switch the 5¹/₄ inch drive into the 80 tracks mode and answer YES to the question Doublestep. In that case you don't have to keep using the track switch in AMIGA mode.

Video - Card emulation Choosing the box Card Emulation shows you which graphic card is emulated by the KCS POWER PC BOARD in PC mode. Version 4.50 of this software emulates various graphics cards. Choose the graphic emulation you expect to be using most. If you choose the largest emulation (VGA/MCGA/MGA/TANDY), you can always switch back to all other emulations- (like CGA or MGA) in the PC mode. However, if you choose CGA or MGA in PC-PREFERENCES, you can no longer switch on the EGA and VGA emulations in the PC mode. If you don't choose the VGA/MCGA/MGA/TANDY emulation (for example you choose the CGA emulation), more work memory will be available to you in the PC mode. You will then have 704 as opposed to 640 kilobytes of work memory. Also, another 32 kilobytes are released for the XMS, EMS and Ram disk drivers. (For usage of these drivers, see 5 4.3). Click again on video to return to the main video menu.

- **Number of VGA colours** The option Number of VGA colours allows you to set the number of colours KCS POWER PC BOARD usually handles. In the 16 colour mode (complete VGA support), the emulator will operate considerably slower than in the 8 or 4 colour mode. Choices: 16 colours (support of all colours, loss of speed), 8 colours (supports frequently used colours, more speed), 4 colours (almost no loss of speed). it is possible to change between 4, 8 or 16 colour mode while in the PC mode, via the AMIGA-help menu (see § 4.2).

- **interlace** Some VGA + MGA graphic modes only perform adequately if your AMIGA operates in the Interlace mode. In this mode, the AMIGA has a higher screen resolution, with the disadvantage of an annoying flickering of the screen. Only a hardware Flicker Fixer and a Multi-Sync monitor can cure this completely. At this moment only an AMIGA 3000 is equipped with a Flicker Fixer. If you set Interlace to NO, then the AMIGA in PC mode will only operate in the interlace mode when necessary. If interlace is set to YES, then the AMIGA in PC mode will always operate in the interlace mode. The latter is often necessary when sending the screen signal of your AMIGA to a video recorder. To suppress flickering, you have a software Flicker Fixer at your disposal. You can start this up with the special key combinations (see § 4.3 - Keys). By using the software Flicker Fixer the screen quality will deteriorate, especially in text modes. Therefore, avoid using the interlace modes (that is all modes with a vertical resolution of more than 200 screen lines; you will find a table of all modes at the back of the manual).

- Status line A status line appears at the bottom of the screen in the PC mode. You can define whether you want that line on screen or not, with Statusline.

- MGA colours Normally MGA does not support any colours, but supports various modes of a pixel. Eg. 'off', 'standard' or 'highlighted'. if you have a colour screen, then MGA colours allows you to assign different colours to the various pixel modes. Colour 16 stands for the screen background, colour 17 stands for the colour of the standard characters and colour 18 stands for the highlighted characters.

- Character height Character height indicates the number of pixels used to build up a character in vertical direction. You can choose between 8 or 9 pixels. A height of 9 will produce a well-formed character, but the height of 8 will result in a slightly higher speed.

- Char flash rate In the MDA text mode, characters can be displayed flashing. Char flash rate indicates the period between two flashes. A higher value result in slower flashing and a lower value results in faster flashing. In the colour text mode the flashing characters are displayed highlighted.

- Cursor flash rate 1-2 In PC mode the screen cursor flash rate can be set to two values. Cursor flashrate 1-2 allows you to set the period of both the two flashing rates. Move the slider on the screen with the mouse to set the period rate land thereby the speed). Again a high value (move slide to the right) means low speed and a low value (move slide to the left) means high speed.

Sound A standard PC has an internal speaker and has limited sound possibilities. Cards like the ADLIB or the SOUNDBLASTER card enable PCs to use special sound effects. The KCS POWER PC BOARD emulates these PC sound cards. The ADLIB card produces an analogue sound comparable to one standard AMIGA sound channel.

The SOUNDBLASTER operates in the same way as the ADLIB card, but offers a number of digital channels. More and more PC software supports these sound cards. You will find applications of the ADLIB and SOUNDBLASTER emulations in the following:

Games Many PC games use ADLIB or SOUNDBLASTER to produce a better sound than possible on standard PCs.

Music programs Current PC software allows you to prepare and play music files in the PC mode. The Public Domain program TRAK even allows you to use music files from

AMIGA programs, such as MED or PROTRACKER in the PC mode. (You will have to copy the so-called MOD files from an AMIGA diskette to a PC diskette. This is possible with Public Domain programs, such as MessyDOS or MultiDOS).

You can choose from the following options by clicking the mouse on the left side of the screen.

- PC Sound: Standard PC sound in the PC mode
- PC Sound + ADLIB: Standard PC sound + emulations of an ADLIB card
- PC Sound + SOUNDBLASTER: Standard PC sound + emulations of a SOUNDBLASTER + ADLIB

Sound in the PC mode is audible through the AMIGA sound channels. The standard PC sound always comes through the left channel; SOUNDBLASTER digital sound always through the right; and ADLIB and SOUNDBLASTER analogue sound can come through both left and right channels. The SOUNDBLASTER emulation operates as a standard PC SOUNDBLASTER which is connected to address 220 with IR07. (Some PCs need this information).

The emulation of a SOUNDBLASTER uses a lot of RAM memory. Therefore, this emulation will only work if you have at least 1 megabyte free Fast-ram available. This refers to RAM memory in your AMIGA before installation of the KCS POWER PC BOARD which is not in use as Chip-ram.

Printer - Printer port You can connect a parallel printer to the AMIGA printer port. With Printer port you can define whether you do or do not want to make use of this in the PC mode. Of course your printer has to be connected to the AMIGA printer port. A PC can support up to three printer ports indicated as LPT1, LPT2, and LPT3. Usually LPT1 is used. Printer port makes it possible to indicate whether you want to use LPT1 or not in the PC mode.

- **Reset command** During start-up, a PC sends a reset signal to the available printer ports to return the connected printers to their original settings. Just as it would be if the power was turned on. In the Reset command box a printer control code can be stored. This means that after a reset, the printer carries out that command. Eg. a form feed after resetting. An overview of the printer control codes can be found in the manual of your printer.

Mouse - AMiGA port AMiGA port makes it possible to indicate to which port (JOY1, JOY2 or no port) the mouse is connected. Usually the mouse is connected to JOY1.

- Mouse emulation In the PC mode the AMiGA mouse operates as a regular Microsoft or Mouse Systems PC-Mouse. Mouse emulation is set to 'automatic', you can not change this setting.

- PC port in the PC port box you can set up how the PC emulator can recognise the AMiGA mouse. We advise you to fill in COM2. Meaning that the PC emulator will recognise the mouse as a regular PC mouse, connected to the port COM2. Apart from that the standard serial port (RS232) available on your AMiGA will be recognized as COM1. It is possible to connect an additional modem or serial printer, so you can use these both in the AMiGA mode and the PC mode. As far as we could check, under PC mode the port can handle a maximum of 38.400 baud on an AMiGA 500. In general, maximum baud rate will be dependent on the used software or modem.

RS-232 Your AMiGA has a standard RS-232 communication port. You can connect, for example, a modem or serial printer to this port. In PC mode, this port will be assigned the name COM1 or COM2. We advise you not to change the standard setting (COM1).

Joystick If your AMiGA has a joy stick, it usually is connected to port JOY2 of your AMiGA. In the 'Joy stick A' box you can indicate to which port your joy stick is connected. If a second joy stick is connected to port JOY1 (to which usually the AMiGA mouse is connected), then you can indicate that in the 'Joy stick B' box. If no joy stick is connected, indicate this by (--). Note: A regular AMiGA joy stick uses small switches built into the joy stick. In the PC environment a different type of joy stick is used, namely the 'analogue' type. Because of this, problems may be encountered using some programs with the joystick.

Keyboard With Keyboard you can control the speed of the key repeat function.

- Delay time Delay time is the time a key has to be pressed before the key starts to repeat. (To short a delay time causes several characters to be displayed on the screen, even if you think you hit the key once.)

- Repeat time The Repeat time is the period between the appearance of the successive characters during the repeat function. A short repeat time will result in a great number of identical characters even if the key is pressed only for a short period.

DiskBuffer A disk buffer is a reserved part of RAM memory, used to store disk drive information. On repeated reading of a same diskette, the emulator will retrieve information from the buffer memory as opposed to from the diskette. This enables the computer to read less from the diskette. This principle enhances the working of the disk drives and lengthens the life-span of both the diskette and disk drive. The PC-PREFERENCE program calculates a value for the disk buffer size. You can change this default value with the two sliders. The number after the term 'Buffer Size' indicates how many kilobytes RAM memory you reserve as disk buffer. The disk buffer function has no effect on the amount of work memory available in the PC mode. The disk buffer memory does unfortunately affect the amount of EXTERNAL memory that is available in the PC mode as Ram disk or EMS. Only one drive can be buffered for an AMIGA without extra memory (besides the memory of the KCS POWER PC BOARD). Disk drives that are not made according to Commodore specifications can cause problems in combination with a disk buffer. Such disk drives do not have 'diskchange' implemented. Therefore, the computer can-not detect when you put a different diskette in the drive. In this case, you will, for example, be shown the wrong directory when using the PC command DIR. Switch the RAM connection off for such drives.

End If you are sure all settings are correct, then the configuration program can be ended by clicking in the 'END' box. All settings will be stored in the file PCPREFS in the s: directory of the start-up disk. So the next time, after starting the emulation program and booting the Operating System, you have a completely customized PC at your disposal.

3. THE KCS POWER PC BOARD in the AMIGA mode

The KCS POWER PC BOARD contains 1 megabyte RAM memory and a real time clock. (Some versions of the KCS POWER PC BOARD are not equipped with a clock. Specifically the 500 Plus version of the board). In most cases, a number of control programs have to be copied to your (start-up) Workbench disk or the harddisk, to be able to use this extra hardware. You also have to adapt the start-up sequence on the Workbench disk or the harddisk, in order to run these programs during start-up. Copying the possible control programs and adapting the start-up sequence is done automatically by the INSTALL program on the included disk.

3.1 Extra RAM memory

The KCS POWER PC BOARD contains 1 megabyte RAM memory. In the AMIGA mode the expansion memory can be used as described in following paragraphs.

AMIGA 500 The KCS POWER PC BOARD offers your AMIGA 500 an extra 512 kilobytes of RAM. Depending on the AGNUS chip in your AMIGA, this 512 kilobytes is either used as Chip RAM or Fast RAM. If the 512 kilobytes is not defined as Chip RAM, then you will also have a 512 kilobyte Ram disk (RMD) at your disposal. The INSTALL program detects which AGNUS chip is housed in your AMIGA. If the option "Install RAM disk" does not appear on the INSTALL menu then your AMIGA cannot use the RAM disk. Using the Workbench program NoFastMem, you can disable the extra Fast RAM (until the next reset).

AMIGA 500 Plus / 6xx Your AMIGA comes with 1 megabyte Chip RAM as standard. The KCS POWER PC BOARD provides an extra 1 megabyte of Chip RAM, making a total of 2 megabytes of Chip RAM. The expansion memory is totally autoconfig. The AMIGA 6xx is also provided with an internal hardware clock.

AMIGA 2xxx/3xxx Your AMIGA will get 1 megabyte extra Fast RAM. To accomplish this, the program KCSCONFIGMEM has to activate the extra Fast RAM during every start-up. The included INSTALL program adapts the Start-up Sequence on the start-up disk, so KCSCONFIGMEM runs automatically. Using the Workbench program NoFastMem, you can disable the Fast RAM.

Note: if your AMIGA has already available 8 megabyte Fast RAM, then the memory on the KCS POWER PC BOARD can not be fully utilized. In this case, the KCS POWER PC BOARD supplies a maximum of 512 kilobyte extra RAM.

3.2 The hardware clock

AMIGA 500 Plus/2xxx/3xxx A clock in your AMIGA is standard, so you can't use an extra clock on the KCS POWER PC BOARD. (In the PC mode the KCS POWER PC BOARD uses the hardware clock in your AMIGA. See also § 4.3)

AMIGA 500 and 600 Your AMIGA has no standard clock. The KCS POWER PC BOARD offers a hardware clock especially for these AMIGA models. The program INSTALL (§ 2.2) covers the complete installation of the clock. The following text is therefore only meant as extra information to the experienced user.

The program PCCLOCK operates the hardware clock. PCCLOCK replaces the regular SETCLOCK, supplied by Commodore, on the Workbench disk.

If you should ever use SETCLOCK (Commodore) instead of PCCLOCK, the next error messages can be expected:

'BATTERY BACKED UP CLOCK NOT FOUND'

or

'<INVALID> <INVALID> <INVALID>'

Automatic use of PCCLOCK The installation program INSTALL (§ 2.2) takes care of the complete installation of the clock. INSTALL copies the PCCLOCK program to your start up disk and adapts the start up sequence so that PCCLOCK is run after a reset. The option 'Set time and date' allows you to relay the correct time and date to the hardware clock. The correct time and date is always stored in the hardware clock, thanks to the battery on the KCS POWER PC BOARD

Manual use of PCCLOCK The command DATE on your Workbench disk allows you to set the correct time and date of your AMIGA software clock. By typing 'PCCLOCK OPT SAVE' you relay the time and date to the hardware clock on the KCS POWER PC BOARD. From now on the hardware clock will always have the correct time and date, even after switching off the AMIGA. By typing 'PCCLOCK' after switching on the AMIGA, you can read the time and date of the hardware clock on the KCS POWER PC BOARD. Therefore it is logical to incorporate the line 'PCCLOCK' to the start up sequence on your start up disk.

3.3 Using a harddisk with the KCS POWER PC BOARD

Before you can use the harddisk in the PC mode of the KCS POWER PC BOARD, the harddisk has to be divided into two or more partitions. This is best done with the software that came with the harddisk. The KCS POWER PC BOARD will use one of these partitions as dedicated harddisk. Usually the harddisk (controller) manual will explain how to make a PC partition. This does, however, refer to PC partitions for the-so-called BridgeBoard. All references to the BridgeBoard in your harddisk (controller) manual should therefore be ignored.

Caution! Adding or deleting partitions on the harddisk will make all information on that harddisk disappear. So first copy all programs on the harddisk you want to keep. Once the extra partition is made, the programs can be copied back to the harddisk.

Complete installation step by step:

Step 1 if you want to use an existing AMIGA partition on your harddisk, continue with step 4.

Step 2 Prepare (in addition to one or more AMIGA partitions) an extra partition on your harddisk using the software that came along with the harddisk and name this partition 'KCS'. You can determine the size of the partition used by the PC mode yourself.

Step 3 Format only the AMIGA partition(s) and give these a name. If you made a back-up, copy it back to the AMIGA partition. If you didn't make a back-up, install or copy the Workbench to the AMIGA partition. Once you have succeeded in doing this, restart the harddisk. On the Workbench screen, both partitions will appear as an icon. Now install the KCS software to your harddisk, as described in § 2.2.

Step 4 Use the accompanying program HD-Setup in the Power-PC drawer of your harddisk to prepare the harddisk for use.

On screen a list of harddisk controllers will be displayed. Refer to your controller manual to find out which controller is yours. Then choose the right type with the mouse. Also choose the partition you want to be used by PC mode. (When you have prepared a partition, but you can't find it in the HD-SETUP screen (top right), you have to 'mount' the partition. Refer to your harddisk controller manual). if you can't set the UNIT number at the bottom right of the screen, the emulator will automatically use UNIT number 0. For this, your harddisk has to be set to 0. which will generally be the case (refer to your harddisk controller manual). End the HD-SETUP program by 'Save + Exit' to store the settings.

KCS POWER PC harddisk-controller selection V4.50				
Controller type	PARTITION	LOcyl	HICyl	Size
RockHard (IDE)	DH1	933	1215	12M
Rossmöller (SCSI)	DH0	1	932	38M
Rossmöller, Turbo (SCSI)				
Spirit HDA506 (OMTI)				
Supra WordSync 2000 (SCSI)				
SupraDrive (SCSI)				
SupraDrive 500 XP (SCSI)				
SupraDrive 500 XP, Turbo (SCSI)				
Triangle TURBO 3 (SCSI)				
Trinology Systems (IDE)	supradirect.devic			
Trumpcard (SCSI)	SCSI ID 0 1 2 3 4 5 6			
Trumpcard Professional (SCSI)				
Winner I (OMTI)				
Select harddisk-controller & partition for PC				
NEXT PREVIOUS		SAVE & EXIT EXIT		

HD-SETUP

Step 5 You can start the emulator by clicking on the POWER PC BOARD icon. After a few seconds the emulator will ask for a system disk (This system disk is only supplied with the KCS POWER PC BOARD if you specifically ordered the MS-DOS operating system). insert the system disk in A:. After a while, your PC is available for use. The harddisk partition can now be accessed in PC mode, but is at this point unprepared and unformatted. Use the PC FDISK^I command to prepare the partition, then the FORMAT command to format it. Refer to the MS-DOS manual for more information on FDISK and FORMAT.

Some DOS versions (especially in MS-DOS 4) can give an error message when using FDISK. For these versions the FDISK doesn't cooperate with the so-called Bootblock on your self-made PC partition. In this case you must delete the Bootblock in the PC partition. Do this as follows: Go back to step 4 and use HD-SETUP as explained in Step 4. Now type the combination [Ctrl/~][F51 just before leaving the HD-SETUP program. An extra box 'Kill Bootblock' will appear.

WARNING: All data on the partition that you choose in HD-SETUP will be lost if you use Kill Bootblock. Only use Kill Bootblock for partitions not containing any data you may need.

Click the mouse on Kill Bootblock and only then leave the HD-SETUP program. Now follow Step 5 through again.

The name of this programme may vary per DOS version

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From now on the PC will check after start-up if a PC system disk is inserted in drive A:. if not, the PC will automatically start from the harddisk. In the AMIGA mode, the PC partition will be displayed as an icon on the Workbench screen. Yet it is impossible to activate it. If you think this icon is annoying, 'unmount' it using the software, accompanying the harddisk controller. To the AMIGA it will appear invisible, but the KCS POWER PC BOARD still recognizes it. Refer to the manual of the controller.

Caution! If you change anything in the partition grouping of the harddisk, you must use HD-SETUP again to relay the new grouping to the emulator software. You also have to reformat the PC part of the harddisk. If you don't do this, the emulator won't use the harddisk correctly, which can cause data loss.

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4. The KCS POWER PC BOARD in the PC mode

4.1 Starting up the PC emulator

Without harddisk Insert the start-up disk you previously prepared (see § 2.2) in DFO:. Now reset the AMIGA or turn on the power. The emulator will start after a few seconds. On screen the message 'Insert system disk' will appear. Remove the start-up disk from the drive. Next insert the PC system disk in the drive (comparable with the AMIGA workbench disk). You only received this system disk if you ordered the MS-DOS operating system separately. After loading the operating system, you can use your PC.

With harddisk Click the mouse indicator on the 'POWER PC BOARD' icon. The emulator starts within a few seconds. The KCS POWER PC BOARD will start up the PC operating system installed by you to harddisk in § 3.3. If the emulator does not start up from harddisk, execute the installation procedure as described in § 3.3.

4.2 Changing default settings

There are various ways of changing the settings of a PC. These are extensively described in the MS-DOS manual, and so will not be discussed here. Because of the special configuration of the KCS POWER PC BOARD you have further ways of changing certain settings. These changes can be made at any time, even during the execution of a PC program.

While in PC mode, hit the Help key and one of the AMIGA keys at the same time. A menu of the settings will appear on the screen. These settings are explained in the next few paragraphs. While you are using this settings menu, the PC is paused in the middle of whatever it was doing when you pressed Help and AMIGA.

After making the necessary changes to the settings, leave the menu by pressing the [ESC] key. You will return to what you were previously doing. The new settings, changed with this menu, are only current as long as the computer stays in PC mode, and will disappear if the computer is turned off or completely reset, and the PC emulator is restarted. The default settings will then be used again. It is only possible to change these settings permanently with the PC-PREFERENCES program.

F1 Key: Exchanging COM1 and COM2 Using the F1 key it is possible to switch the logical designation for the serial port. This can be useful in case a specific program demands communication through COM1 or COM2, while the mouse has been installed on that port.

Caution: if a COM port already had been used by a mouse driver or a communication program, then reset the computer using [F10] followed by [ESC].

F2 Key: Exchanging designation of disk drives ^aFO: and DF1: Using an external floppy disk drive makes it possible to exchange the drive designations DFO: and DF1: with help of the F2 key. The computer has to be reset, using F10, or the exchange will not take place. Note: With respect to the PC the exchange is not only a logical but also physical. Problems can arise if you have an external 40 tracks drive or an external 80 tracks drive configured for 40 tracks and if the CONFIG.SYS file contains one of the commands DEVICE=DRIVER.SYS or DRIVPARM. Refer to your MS-DOS manual.

F3 Key: --This key has no function.

F4 Key: Fast monochrome mode With this option you can quickly switch between the standard and faster graphic monochrome mode of the KCS POWER PC BOARD. The faster mode is not 100% compatible with the PC standard and can result in a distorted screen. The fast mode is only available for video modes 15 and 17 (see table in the back of this manual).

F5 Key: Number of colours With the F5 key you can now choose between the standard 16 colours EGA or VGA hires modes and the faster 8 or 4 colours EGA or VGA HiRes modes. Note that the F5 key is only applicable to HiRes modes, meaning all colour modes with a resolution of more than 32Q horizontal pixels.

F6 Key: Normal harddisk use / harddisk write-protect Using the F6 key you can write-protect your PC harddisk. During 'Normal harddisk use' the harddisk operates as a normal PC harddisk. If you switch to 'Harddisk write-protect', no more data can be written to harddisk. (You can compare this with the tab at the corner of a diskette, which slides to switch write-protection on or off). Using this you can prevent PC programs from writing data to harddisk. For example, you can safely try out the latest Public Domain programs without the risk of a virus writing to the harddisk. (We recommend you use a separate virus killer; the PC emulator itself does not check for viruses). The write-protection is only applicable to the PC partition of your harddisk, and works only in PC mode. if PC software tries to write data to the write-protected harddisk, an error message will follow.

F7 Key: Status line On / Off The PC-PREFERENCES program allows you to choose whether you want the status line on or off. This setting can be changed by using F7. If you choose to activate the Status line, then the bottom line of the screen will display information like track display of the disk drives and the status of CapsLock, NumLock and ScrollLock. A capital R will appear in the Status line if the emulator is using RAMdisk. An X or an E will appear if the emulator addresses the KCSXMS.SYS driver, or the KCSEMS.SYS driver respectively. (See § 4.3 which explains the KCSXMS.SYS, KCSEMS.SYS and KCSRAM.SYS drivers). Switch the status line off with F7 and the time and date will also disappear.

F8 Time and Date When you choose to show Time and Date, this information will be displayed at the bottom line of the screen (but only when the status line is enabled).

F9 Key: Buffer drive This option lets you choose whether to use the driver buffers or not. Disabling the buffers may be necessary for some copy protected programs.

F10 Key: PC hardware reset When a PC program locks up on you, you can reset the emulator in a number of ways. The first thing you can try is the software reset; press [CTRL], [AL^n and [DEL] at the same time. If this has no effect, go to the AMIGA-help menu and press the F10 key followed by [ESC]. The hardware of the KCS POWER PC BOARD will do a complete reset. After every reset, the emulator will reload the PC operating system. Only after this is loaded can you reload the program you were using. In both cases you need not reload the emulator software of the KCS POWER PC BOARD. The emulator software only needs reloading when you can't even do a hardware RESET (using F10 as above) and you have to reset the AMIGA (by pressing [Ctrl] and the two [AMIGA] keys at the same time). After returning to the AMIGA mode you can restart the emulator. All settings will again be dependent on PC-PREFERENCES.

Colour settings At the bottom right of the screen three boxes are displayed. A pointer is next to one of them and can be moved with the [up] and [down] keys in the inverted-T of cursor keys. (If your AMIGA computer does not have a numeric pad, see I 4.4). These three boxes represent the shades of grey (or colours) in MGA mode used for the background, normal characters and highlighted characters. The colour or the shade of grey of the indicated box can be altered. This can be done by moving the three horizontal sliders in the menu screen. These sliders can be moved with help of the numeric keys on the numeric pad. (Not the numeric keys on top of your keyboard). The [7] and [9] keys control the red colour slider; the [4] and [6] control the green colour slider; and the [1] and [3] control the blue colour slider.

At the right side top of the screen, the 16 boxed colours display the current VGA palette. You can not change these colour settings; software using VGA mode sets the colour palette itself.

4.3 KCS Utility programs

The PC disk you previously prepared with PC-UTILITIES (§ 2.1) during the installation procedure, contains the following utility programs. You can use the various programs at any time in PC mode. These programs are found in the 'KCSUTILS' subdirectory and documentation for each of these programs is available in the 'KCSDOC' subdirectory. Furthermore, most programs will show a brief description of their options, if you run the program but put "/" after the program name (except .SYS programs, which cannot be started directly). The PC-UTILITIES disk also contains an INSTALL program, which must be executed to install the utility programs automatically. (There is also a "KCSDOCS" program, which installs the documentation). A description of each of these programs follows.

INSTALL After starting up this program, a complete view of various utility programs is displayed. With the [Up] and [Down] cursor control keys you can select a certain utility program. After this you can use the [Left] and [Right] and possibly the +/- keys to change the displayed settings. Use [F10] to install, use [ESC] to terminate installation. You can also use the INSTALL program to change the settings of already installed utility programs.

CLOCK The program CLOCK.COM reads the time from the hardware clock and passes this time to the PC software clock to use as system time. The PC software will then use the correct time and date, but will not recognise a hardware clock. During each PC mode start up, the emulator will automatically pass the time of the hardware clock to the PC software clock. Therefore you only need the CLOCK program if you want to read the hardware clock while working in the PC mode.

KCSCLOCK This program (KCSCLOCK.SYS) couples the KCS POWER PC BOARD hardware clock to the PC software clock. The PC software will now work with the correct time and date, and furthermore, the PC software will recognise the hardware clock. The installation program places the extra line 'DEVICE = KCSCLOCK.SYS' in the so-called CONFIG.SYS of your PC start up disk. Refer to your MS-DOS manual with regard to using .SYS files. (You only received the MS-DOS manual if you purchased the MS-DOS Operating System separately). The text file KCSCLOCK.DOC further explains this program.

KCSMOUSE Before operating a mouse under PC mode you have to start the program **KCSMOUSE.COM**, a so-called Mouse-driver. The installation program places this program in **AUTOEXEC.BAT**. If you are using a PC program that responds directly to the mouse, you will usually have to define the mouse you are using. To do this, you can choose either a (two-switch) Microsoft Mouse or a Mouse Systems Mouse. The AMIGA mouse will react automatically as the defined mouse. The text file **KCSMOUSE.DOC** further explains this program.

TURBOVID This program (**TURBOVID.COM**) can enhance the speed with which the PC screen image is built up. You can compare it with the **FASTFONTS** program that has a similar effect in the AMIGA mode. **TURBOVID** is not effective in the graphic modes of your PC, but only in the text modes. Because **TURBOVID** takes over the text handling, it is impossible to run it in parallel with other text handling programs like **ANSI.SYS**. Activating **ANSI.SYS** first and then running **TURBOVID.COM** means **ANSI.SYS** is overruled. But your computer will not 'lock'. The **TURBOVID** program works in conjunction with the **VMODE** program. If you wish to use both programs, you must start up **TURBOVID** first and only then the **VMODE** program. If you were to turn this sequence around, the function of **TURBOVID** would be lost. If you are also using the **KCSMOUSE** program, you must start up the **KCSMOUSE** program before starting up **TURBOVID**. Here too the function of **TURBOVID** is lost if you turn the sequence around. The afore-mentioned **INSTALL** program automatically takes the sequence into account. More information is stored in the text file **TURBOVID.DOC**.

VMODE Many PC programs ask the user which graphic card and/ or text mode is to be used. Other PC programs will choose a mode independently (such as **DOSSHELL** from MS-DOS 4.0 or 5.0). With the **VMODE.COM** program you can influence or limit the behaviour of the video emulation. For example, if you use **VMODE** to switch from VGA to CGA emulation, a PC program can no longer use the VGA mode. Using this you can force PC programs to use a certain mode. The command '**VMODE EGA 8**' turns your computer into the 8 colour EGA mode. Valid modes: CGA, MDA, MGA, EGA, EGA-S, VGA, TANDY and Pcjr. The number of colours can be 4, 8 or 16. Some PC programs check which video card is available directly. Such 'messy' programs then find a different graphic card than you preset with **VMODE**.

VMODE can also be given the following parameters:

FIXER = 0.. 17	(Measure of how active Flicker Fixer is in interlace monochrome MGA/EGA/VGA)
SYNC = on/off	(Switches monitor synchronization control on/off)
INTERLACE = on/off	(Switches interlace on/off)
LINES = even/odd	(Displays even and odd lines in interlace modes where Flicker Fixer is active)
MONO = add/sub	(Inverts the monochrome EGA/VGA graphic screen)
ZOOM = on/off	(Switches the enlarged MDA text mode on/off)

The text file VMODE.DOC explains this program further.

WARMBOOT The program WARMBOOT.COM has the same function as pressing simultaneously [Ctrl], [Alt] and [DEL] keys. By starting up this program you reset the PC.

COLDBOOT Just as WARMBOOT, this program (COLDBOOT.COM) also resets. COLDBOOT has the same function as the F10 key in the AMIGA-help menu. WARMBOOT and COLDBOOT are both meant for use in batch files.

Extra Memory (XMS, EMS and RAMdisk) in the PC mode

On top of the standard 640 (704) Kbyte memory the PC emulator has at its disposal, it is possible to expand the memory with help the programs KCSXMS.SYS and KCSEMS.SYS. These make it possible to define to the PC software all memory on the KCS POWER PC BOARD and in the AMIGA. In the PC you then have extra memory besides the standard 640 (704) kilobyte. To do this, you have to add the line 'DEVICE =KCSXMS.SYS/EMS' to your system disk in the CONFIG.SYS, followed by 'DEViCE=KCSEMS.SYS SIZE=XXX'. Adding '/EMS' takes care that KCSXMS.SYS leaves a special part of RAM memory free for the KCSEMS.SYS driver, to be activated a little later. Without this addition, KCSEMS.SYS can not work. Adding 'SIZE =' displays the number of kilobytes reserved as EXPANDED memory. If you do not add the size parameter, the EMS driver will devour all the extra memory and leave nothing for a RAMdisk. The extra memory does not work as work memory, but for storing data by PC software. This extra memory is automatically used by certain PC software (refer to your PC software package manual). In hi 6.3 you will find a full technical description about how PC memory works. However, you need not study this for good operation of your KCS POWER PC BOARD.

Example. If you are using MS-DOS version 5.0, for example, the following lines could be in your CONFIG.SYS.:

DOS = UMB	—define Upper Memory Blocks
DEVICE=C:\KCSUTILS\KCSXMS.SYS/EMS	—activate Upper Memory Blocks
DEVICEHIGH = C:\KCSUTILS\KCSEMS.SYS	—activate EXPANDED Memory
DEVICEHIGH = C:\....	—enter possible devices that you wish to use, e.g. COUNTRY.SYS.

To activate a reset-fast RAMdisk, you can use the program KCSRAM.SYS. This file must also be defined in the CONFIG.SYS of your PC start up disk. KCSRAM.SYS searches for all memory in the AMIGA that has not already been used by KCSEMS.SYS or other drivers. This free RAM memory is then used as RAMdisk. The RAMdisk is automatically designated a letter (e.g. D:) depending on the number of connected disk drives and the MS-DOS version in use. We refer you to the MS-DOS manual for further details on CONFIG.SYS.

If the Status line is on (see § 4.2) you will see the letter R flashing on the right side bottom of the screen as soon as the PC addresses the RAMdisk. Also, an X or an E will flash when the PC responds to KCSXMS.SYS, or KCSEMS.SYS respectively.

4.4 Special Key Combinations

During emulation as an PC you can use the following key combinations. (A-F1 means the AMIGA key on the left side or the right side of the space bar, combined with the F1 key)

Type Function

- A-F1 F11 (see MS-DOS manual)
- A-F2 F12 (see MS-DOS manual)
- A-P Pause on/off. This pause key stops/restarts the operation of the MS-DOS computer.
- A-V Video information on/off. In the status line a number is displayed showing which video emulator the emulator is currently using. You will find a display of the video modes and numbers in the technical information at the back of this manual.
- A-S Sync. (video) on/off. With Sync. disabled, PC doesn't synchronise the screen output. Sometimes it accelerates display on screen, but some programs can't handle it.
- A-F Fast format on/off. (An F is displayed in the status line if fast format is active). This option switches the verify off. Because of this formatting diskettes is faster, but not checked for errors. Therefore we advise you to use this option only for diskettes that have been found error-less beforehand.

The following key combinations can be made by pressing the AMIGA key and one of the keys of the numeric pad simultaneously. If you do not have a numeric pad, read the description of A-ALT.

On all AMIGA models

- A-ALT Summon Numeric Pad
By pressing the [AMIGA] and the [ALT] key simultaneously, you summon a special screen. (It is of no difference whether you use the [AMIGA] and [ALT] key to the right or to the left of the keyboard). If you press the [AMIGA] and [ALT] keys briefly, the special screen will stay displayed. If you press the key combination longer, the special screen will disappear when you release the keys. This is useful if you, for example, wish to press the [PgDn] key in the PC mode. The special screen displays a numeric keyboard. You can click the keys on the numeric pad with the mouse. This allows you to use the key combinations mentioned for an AMIGA 600 as well (while the AMIGA 600 does not have a numeric pad on the keyboard). So, for example, you press the [AM/GA] key, while clicking the 8 on the special screen with the mouse. You have now activated the A-8 combination which is described further on. The special screen operates like a standard AMIGA window. You can move it with the mouse and end it with the CLOSE gadget (top left). You can also end the screen by pressing [AMIGA][ALT] again.

		CA LC	T
(NL) SL	/	*
7 HM	8 ↑	9 PU	-
4 ←	5	6 →	+
1 EN	2 ↓	3 PD	E n t e r
0 Ins	.	DEL	

The keys on the numeric pad

Calc: Switch to calculator screen T: Switch background grey/clear
 NL: [NumLock] key SL: [ScrollLock] key HM: [Home] key PU: [PageUp] key EN: [End] key PD: [PageDown]
 key Ins: [Insert] key DEL: [Delete] key Enter: [Enter] key

A-ALT Summon Calculator

With this key combination you activate the special screen as described above. However, the special screen also has an additional function. If you click the mouse on the CALC symbol, the screen is changed into a calculator. You can enter numbers and calculations with the mouse. By clicking the mouse on the calculator display, you copy the number on that line to the keyboard buffer. The PC program that you are currently using will read the buffer. By using this, you can transfer the result of a calculation to a word processor running in the PC mode at that moment

		CA LC	T
0			
M+	M-	MR	MC
C/ CE	±	/	* PS
7 HM	8 ↑	9 PU	-
4 ←	5	6 →	+
1 EN	2 ↓	3 PD	E n t e r
0 Ins	.	DEL	

The keys on the calculator screen

Calc:	Switch to numeric screen	T:	Switch background grey/clear
M +:	Add result to memory	M-:	Subtract result from memory
MR:	Call up memory	C/CE:	Clicking once: delete last action Clicking twice: set display to 0
+/-:	Change displayed sign	/:	Divide
*:	Multiply	-:	Subtract
+::	Add	Enter:	Calculate result

The calculator operates as a standard AMIGA window. You can move it with the mouse and end it with the CLOSE gadget (top left). (You can also end the screen by pressing [AM/GA]-~ALT1 again). By pressing CALC again, the special screen changes back to numeric pad as described above.

Only in monochrome text mode

- A-8 Enlarge text screen
- A-2 Normal text screen
- A-4 Display left side of the text screen
- A-6 Display right side of the text screen

Only in EGA and VGA HiRes colour mode

- A-) Activate software Flicker Fixer, at the expense of the resolution
- A-(Deactivate software Flicker Fixer, in favour of resolution
- A-/ Exchange the active image lines in the lower resolution after A-). This may give a better resolution.

Only in MCGA mode 19

- A-X Switches between the three MCGA displays. Possible settings: emulation in 32 colours; - emulation in 32 green shades; - emulation in 16 grey shades. These exchanges do not work on AMIGA computers without extra memory (besides the memory on the KCS POWER PC BOARD).

Only in the graphic HiRes monochrome mode

- A-) Activate software Flicker Fixer step by step, at the expense of resolution
- A-(Deactivate software Flicker Fixer step by step, in favour of resolution
- A-/ Switching between the normal and the inverted displays of a monochrome graphic screen.

Only for the AMIGA 500, 500 plus and 600

- A-- Delaying step by step the speed of the computer, eg. useful when texts scroll too quickly
- A-+ Decrease delay step by step
- A-* Switching between 100% speed and 20% speed

5. Miscellaneous

5.1 Fast Memory /32 bit RAM

Using Fast Memory (memory expansion) or 32 bit RAM (on a TURBOBOARD), accelerates I/O (Input/Output) and the video emulation. For example, if you have installed extra memory on your hard disk, image refreshing is done considerably faster. (Sometimes even faster than on a 'real' PC-AT). If you really want to get the most out of your AMIGA and the KCS POWER PC BOARD, then use extra Fast RAM. After connecting extra memory to your AMIGA, reinstall the emulator with INSTALL. The PC emulator automatically uses all the extra memory, if available, and offers the following advantages:

- a. Screen control will accelerate. Furthermore, the MCGA graphic mode 19 can be displayed in colour instead of grey shades.
- b. Emulation of SOUNDBLASTER card possible.
- c. Handling floppy disks will be quicker because the Cache memory of the disk drive is automatically larger.
- d. In the PC mode the extra memory is available as RAMdisk and or EXPANDED memory according to the LIM standard (Lotus/Intel/Microsoft), by using KCSEMS.SYS and KCSRAM.SYS. How you should use EXPANDED memory depends on the PC software you are using. Refer to the manual of the software you are using.

5.2 Changing batteries

The following is not applicable to the AMIGA 500 +, as the KCS POWER PC BOARD does not contain a battery for that computer type. Theoretically the life of the batteries that feed the hardware clock is 8 to 12 years. After this period, or sooner if the battery is empty, it has to be replaced. The battery ensures that a number of important settings for the KCS POWER PC BOARD are stored, even after switching off your AMIGA. Without the battery, or with an empty battery, the KCS POWER PC BOARD will not function. But also if the battery is shortcircuited or removed briefly, the KCS POWER PC BOARD will no longer function, as the fore-mentioned settings will be lost. After installing a new battery the KCS POWER PC BOARD will still not function. First the settings must be transferred again to the KCS POWER PC BOARD.

If you suspect the battery is empty, follow the procedure for installing the clock, as written in § 3.2, where a number of settings are saved to the KCS POWER PC BOARD. If after that, the clock on the KCS POWER PC BOARD still is not working, then it is possible that the battery is empty and needs replacing. In this case, contact your dealer or KCS.

5.3 Tips

PC versus AMIGA

AMIGA computers are recognized as user-friendly computers with first-rate graphics and sound quality. PCs are recognized as work computers, for which a lot of business software is available. Many things which are taken for granted on an AMIGA, like the use of stereo sound, simply do not work on a PC. To make use of graphic and sound possibilities on a PC, special expansion cards will have to be connected. The KCS POWER PC BOARD emulates some of these hardware expansions. Even so, you will undoubtedly encounter software that does not make use of this. For example, it is possible that, for a certain PC program, a mouse-pointer is not shown.

Modem use If you have a modem connected to your AMIGA serial port, you can use this modem in the PC mode, using the PC communication software intended for this purpose. When you are going to 'download' a file, it is handy to ensure that the software used writes the file to harddisk or RAMdisk, instead of diskdrive. A diskdrive functions relatively slowly in comparison to harddisk or RAMdisk. Downloading could operate unnecessarily slow and furthermore, errors could appear.

Numeric pad / calculator in MCGA mode 19 The video mode 19 (MCGA mode) uses 32 colours, 32 green shades or 16 gray shades. When you call up the special numeric pad / calculator screen in this mode, it is possible that the screen is not totally visible. If you exchange from 32 colours (or green shades) to 16 grey shades using [A]-X, the special screen is visible again.

Monochrome is faster The text modes of the KCS POWER PC BOARD operate extremely fast, even in 16 colours. But for some PC programs it can't operate fast enough. In this case, you can exchange the VMODE to a monochrome text mode. The monochrome text modes are always faster than colour text modes. This can be useful when using a modem that sends text to the screen with an extremely high speed (more than 19200 baud).

5.4 The KCS POWER PC BOARD helpline

POWER PC BOARD H E L P L I N E: 091-490 02 02

YOU MAY CONTACT THE KCS HELPLINE FOR PROBLEMS CONCERNING THE KCS POWER PC BOARD, FOR WHICH THE MANUAL OFFERS NO SOLUTION

For queries concerning the use of PC software, we refer you to the manual of the program in question. The KCS helpline is only meant for problems concerning the KCS POWER PC BOARD and the emulation software supplied with it. If you use the helpline, make sure that you are aware of the information KCS will need to help you effectively:

- Before you call, write down which version number of the KCS POWER PC BOARD software you are using. You can find this number by starting up your AMIGA with the original WorkBench from Commodore; after that, insert the original diskette of the KCS POWER PC BOARD in a diskdrive. The icon of this diskette will appear on the screen, with the name/version number underneath. Write this name/version number down precisely.
- Also write down which AMIGA model you have.
- Make a list, for yourself and for us, of which hardware and software you use on your AMIGA.
- Make sure you know which version of which PC program is causing problems.
- if possible, write down the error messages exactly as you see them on screen.
- Note all further information that has anything to do with the problem.

If you have this information in front of you, while calling KCS, we will be able to deal with your problem efficiently and quickly. If you would prefer to write to us, you are welcome, of course. Send your correspondence to:

Bitcom Devices Ltd. 88 Bewick Road, Gateshead, Tyne & Wear NE8 1RS England

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6. Technical Reference

6.1 General

Processor:	NEC V30 running at almost 11 Mhz.
Memory:	1 MB RAM available in both the AMIGA* and the PC mode. Extra memory in the AMIGA is available under the PC mode as RAMdisk and/or EXPANDED MEMORY.
RS232:	Supporting the serial port of the AMIGA as a PC COM port. While testing communication programs, speeds of 38.400 baud were reached on a standard AMIGA 500. When using a TURBOBOARD, the maximum speed can be even higher. However, in all cases the maximum baud rate will depend on the modem and software used.
Mouse:	Standard AMIGA mouse is used as a two-button Mouse Systems and Microsoft compatible mouse in the PC mode.
Joysticks:	The AMIGA joysticks can be used in the PC mode as digital PC joysticks.
Drives:	4 standard AMIGA disk drives operate as PC disk drives. The emulator supports both 3.5 inch and 5.25 inch drives. Disk cache memory and track display available as standard.
Hard disk:	Most well-known AMIGA harddisk controllers are supported, therefore almost any AMIGA harddisk can be used with the KCS POWER PC BOARD. After installation supported harddisk types can be used fully or partially as PC harddisks.

Various PC emulator settings can be adjusted during PC mode operation. In the PC mode the emulator also supports a Pause key.

6.2 Graphic support

The PC recognises a large number of screen formats and the control hardware is usually located on a separate card. With the KCS POWER PC BOARD, your AMIGA, together with the emulation software generate a certain screen format. This gives you a software Flicker Fixer at your disposal. At this moment version 4.50 supports the following screen formats:

- CGA Colour Graphics Adapter. Both the original CGA mode and the CGA mode as part of the VGA support are available. Resolution is 320x200 in 4 colours, or 620x200 in 2 colours. Text modes 40x25 and 80x25 in 16 colours. Total colour palette: 16 colours
- MGA Monochrome Graphics Adapter, text and graphics compatible with the HERCULES card, also called HGC (Hercules Graphics Card). This is a monochrome screen with a resolution of 720x348 in two colours.

* Depending on the type of AMIGA, see 5 3.1

MDA Monochrome Display Adapter: Text only in two colours.

Tandy 1000 These two graphic emulations are exactly the same. Resolutions of
& 160x200, 320x200 and 640x200 in 16 colours. Not all software packages
PCjunior support the Tandy 1000 IPCir) modes. Total palette: 16 colours

EGA Enhanced Graphics Adapter. Resolution is 640x350 maximum in at most
16 colours. Total Palette: 64 colours

EGA-S Super Enhanced Graphics Adapter. Resolution is 640x480 maximum in
two colours tot resolutions up to 640x350 in 16 colours). Total palette: 64
colours

VGA Video Graphics Array. Resolution is 640x480 maximum in 16 colours.
Total palette: 4096 colours

MCGA Multi Colour Graphics Array. Resolution of 320x200 in 32 colours
(16 grey shades on an AMIGA without extra memory). Total
palette: 4096 colours

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Video modes and matching status line numbers

Mode	Type	Resolution	Colours	Mode is supported by						
				MGA	CGA	MCGA	TANDY/PCjr	EGA	EGA-S	VGA
00	Text	40 col.	16		•	•	•	•	•	•
01	Text	40 col.	16		•	•	•	•	•	•
02	Text	80 col.	16		•	•	•	•	•	•
03	Text	80 col.	16		•	•	•	•	•	•
04	Graphic	320x200	4		•	•	•	•	•	•
05	Graphic	320x200	4		•	•	•	•	•	•
06	Graphic	640x200	2		•	•	•	•	•	•
07	Graphic Text	720x348 80 col.	2 2	•						
08	Graphic	160x200	16							
09	Graphic	320x200	16				•			
10	Graphic	640x200	4							
11	This mode is internally reserved by the video card									
12	This mode is internally reserved by the video card									
13	Graphic	320x200	16					•	•	•
14	Graphic	640x200	16					•	•	•
15	Graphic	640x350	2					•	•	•
16	Graphic	640x350	16					•	•	•
17	Graphic	640x480	2			•			•	•
18	Graphic	640x480	16						•	•
19	Graphic	320x200	256			•				•

Remark 1: Modes with a vertical resolution of more than 200 pixels are displayed in the interlace mode of the AMIGA.

Remark 2: The Pcjr and TANDY (mode 9) and MCGA (mode 19) are especially recommended for games, because of the perfect relation between screen quality and speed.

Remark 3: in the EGA modes texts are displayed in maximum 80 columns by 43 lines (in VGA modes 80 columns by 50 lines). These special text modes can only be used by MS-DOS programs that support them.

Remark 4: Mode 19 is emulated in maximum 32 colours or green shades (16 grey shades on an AMIGA without extra memory).

6.3 The PC memory

The KCS POWER PC BOARD offers a working memory of 640 kilobyte RAM, just as a standard PC. If EGA or VGA emulation is not used (in the PCPREFERENCES program) the maximum work memory is 704 kilobyte. A number of PC programs needs more memory than this and can enlist extra memory. This extra memory does not serve as program memory, but as storage of program data. To do this a utility program must be started up to activate the extra memory. Then PC programs can address the extra memory. For that matter, PC programs that were not designed to work with extra memory will only use standard work memory. There are different sorts of extra memory, which can cause confusion. The current standard is as follows:

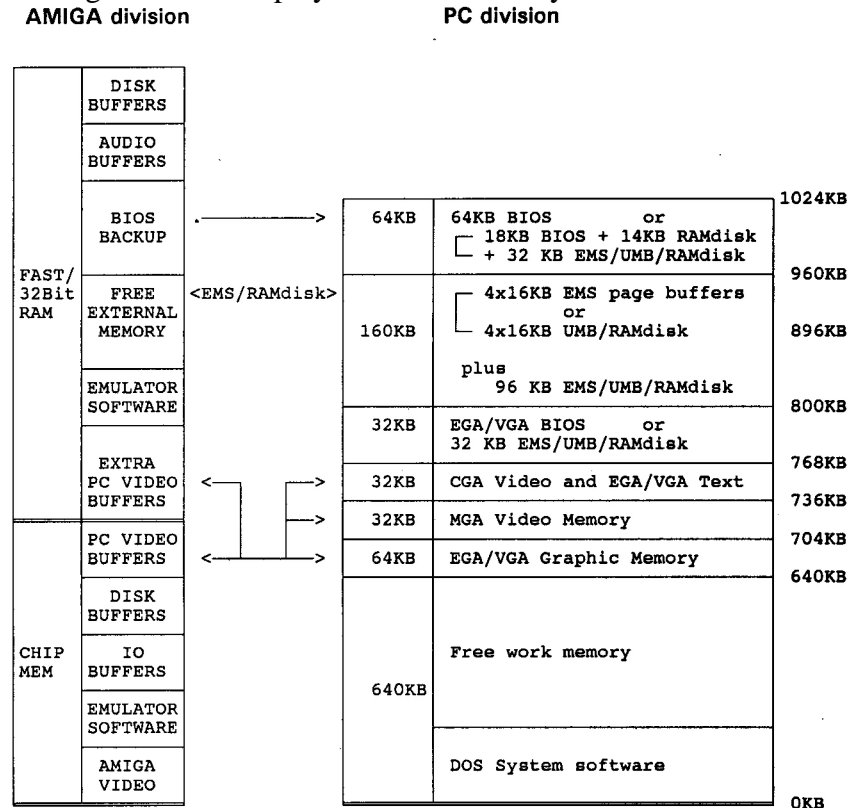
- A PC can address a maximum 1 megabyte RAM memory directly. Of this memory, 640 (or 704) kilobyte is reserved as work memory. You can use 192 kilobyte from the remaining 384 kilobyte in the PC mode as extra memory. This extra memory is called the UMB (Upper Memory Blocks). - To be able to use more than the 1 megabyte RAM memory a number of firms have agreed on a certain method, the so-called LIM standard (LOTUS, INTEL, MICROSOFT). Many megabytes of memory can be enlisted using this standard. This extra memory is called EXPANDED Memory, shortened to EMS. - With the arrival of new computer models, a new standard was introduced: the EXTENDED memory, shortened to XMS. Just as the EMS standard, this standard makes using many megabytes of extra memory possible. However, the XMS standard also allows the use of the afore-mentioned Upper Memory Blocks.

The KCS POWER PC BOARD contains 1 megabyte RAM memory. The Fastram memory that was already in your AMIGA computer, serves as extra memory in the PC mode. The emulation software supports the standard mentioned above. The memory division will then be as follows: - Standard work memory of 640 (or 704) kilobyte - Usage of Upper Memory Blocks (via the help program KCSXMS.SYS), by the XMS standard. - Usage of extra memory (via the help program KCSEMS.SYS), by the EMS standard. - Availability of a reset-proof RAMdisk (via the help program KCSRAM.SYS).

The designers of PC-software have thought up a method to keep as much of the standard work memory free as possible. This can be useful in relation to PC programs which can't use extra memory. This method is called 'HighLoading'. Certain parts of the PC Operating system are then moved from the work memory to the extra memory. How this works exactly differs per DOS version. Therefore, we refer you to your MS-DOS manual.

The memory division in PC mode

The figure below displays how the memory is divided while working in the PC mode.



The Amiga memory that is available as Diskbuffer, EMS or RAMdisk is mentioned in the blue BIOS-configuration screen as EXTERNAL. This memory (as far as it is not used as Diskbuffer) can be used, using the PC-Utilities KCSEMS.SYS. At the same time, you can use this memory as reset-proof PCRAMdisk, using the PC-Utility KCSRAM.SYS.

If the VGA emulation is switched off in the PC-Preferences program, the '64KB EGA/VGA Graphic Memory' is available as 'Free work memory', so that a total of 704 KB 'Base Memory' is reached. The '32KB EGA/VGA BIOS' is also cancelled, which means this memory is additionally available as UMB, Expanded Memory or RAMdisk.

Vocabulary

Operating system	Software that controls the working of the computer and the usage of external equipment such as diskdrives and I/O ports. For PCs the Operating system is usually MS-DOS.
BIOS	Basic input Output System. The BIOS takes care of addressing standard I/O equipment such as: keyboard, diskdrive controller, v video cards, etc. the control of such equipment is therefore left to the BIOS by DOS and by PC software.
Device Driver	A Device Driver is a program that takes over the addressing of a device. Namely for equipment that is not already controlled by BIOS. For example, a mouse-driver, a RAMdisk-driver or an EMS-driver.
DOS	Disk Operating System. The controlling software that makes use of the computer as a system possible. An IBM compatible computer like the KCS POWER PC BOARD cannot run programs without DOS. DOS must be loaded from diskette or harddisk every time the KCS POWER PC BOARD is started up. The most well-known DOS version is MS-DOS from Microsoft.
EMS/ Expanded Memory above the 1 address via a special according to	Expanded Memory Specification. This Device Driver takes over controlling Expanded Memory. That is memory megabyte limit. The KCS POWER PC BOARD can memory above 1 megabyte as Expanded Memory EMS driver. This Device Driver generally operates the LIM (LOTUS, INTEL, MICROSOFT) standard.
EMULATOR	A combination of special programming techniques and special machine characteristics, by which a certain computer system can execute programs, written for a different system.
TSR	Terminate Stay Resident. TSR programs are loaded in the memory and are present from that moment on 'hidden' in the computer memory. Also named resident programs. Once loaded, a TSR program can execute actions from the memory, while the user continues working.

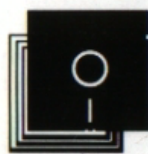
UMB Upper Memory Blocks. Blocks of memory, each 16 kilobyte. These blocks are situated in the memory area 'above' the normal work memory, but 'under' the 1 megabyte limit. These memory blocks are controlled by an XMS Device Driver. Some DOS versions and TSR programs can utilize this memory.

XMS/
Extended Memory extended Memory Specification. An XMS Device Driver takes care of the operation of Extended Memory and UMB memory. Only suitable for processors of the type 80286, 80386, 80486, etcetera. As the KCS POWER PC BOARD does not have such a processor, it can not control extended Memory. However, the special KCSXMS.SYS Device Driver does take care of using UMB memory under the 1 megabyte limit.

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